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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/805,279	03/13/2001	Robert M. Barnhart	SAIC0039	1264

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EXAMINER	
JARRETT, SCOTT L	

ART UNIT	PAPER NUMBER
3623	

MAIL DATE	DELIVERY MODE
06/03/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/805,279	BARNHART, ROBERT M.	
	Examiner	Art Unit	
	SCOTT L. JARRETT	3623	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 April 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *29-33* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *29-33* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 April 2008* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This **Final** Office Action is in response to Applicant's amendments filed April 9, 2008. Currently claims 29-33 are pending.

Response to Amendment

2. The Objection to Figure 5 in the previous office action(s) is withdrawn in response to Applicant's arguments.

The Objection to the Title in the previous office action(s) is withdrawn in response to Applicant's amendment to the Title.

The Objection to the Specification in the previous office action is withdrawn in response to Applicant's arguments.

However, the examiner notes that the applicant's revisions fail to provide any specificity or clarity as to how or when a vote serial number is assigned/associated to/with a ballot (i.e. the specification provides no clear guidance as to how to interpret the claim "associating the Bcast and DS(Bcast,s) with a vote serial number VSN").

Therefore the examiner is interpreting the claim to encompass associating any unique identifier with a ballot either before or after the voter (user) casts his/her vote ("vote serial number", as defined by the specification,: "Note that the VSN… is ***just an incidental sequence number*** that indicates a vote was delivered in the election" (emphasis added, Paragraph 0054).

Additionally it is noted that a pre-cast ballot (vote) having an associated vote serial number (e.g. ballot number) retains (remains associated with) the unique identifier even after the ballot has been cast (i.e. once the vote serial number has been assigned to the vote/ballot it remains associated with the ballot before, during and after the user votes using the ballot).

Further it is noted that it is old and very well known in database systems to assign a unique identified (key, primary key, candidate key, unique key), either manually or automatically by the database management system, to all records in a database in fact databases would be unusable without a unique identified associated and assigned to each record as it is stored into the database.

Response to Arguments

3. Applicant's arguments filed April 9, 2008 have been fully considered but they are not persuasive. Specifically Applicant's argue, as argued and address in the previous office action mailed January 29, 2008, that:

d) the recent OA mischaracterizes Shrader and Cranor;

e) SHRADER discloses the wrong data, encrypted with the wrong key;

f) the recent OA mischaracterizes Shrader and Cranor to find a non-existent "user" in those references.";

g) the recent OA mischaracterizes Shrader to find a claimed comparison; and

h) the recent OA neglects to account for an Element of the Confirmation Token.

In response to Applicant's argument that the prior art of record, specifically Shrader or Cranor fail to teach all the limitations as claimed the examiner respectfully disagrees. Please see earlier response to arguments in the office actions mailed January 29, 2008 and

In Applicant's remarks, see page 7, Applicant's state that a spreadsheet tracing all features of Figure 5 to specific paragraphs and phrases within the specification was included as part of the Applicant's response filed April 9, 2008. Examiner notes that the spreadsheet was not received as part of the response filed April 9, 2008. While the spreadsheet was briefly reviewed as part of the interview held with Mr. Dimino on March 26th, the examiner request applicant's submit the referenced spreadsheet.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 29-30 and 33 are rejected under 35 U.S.C. 102(e) as being anticipated by Shrader et al., U.S. Patent Publication No. 2002/0077887.

Regarding Claims 29 and 33 Shrader et al. teach a method and system for assisting a user in verifying a cast ballot recorded (saved, stored, executed, etc.) in a system (server) comprising (Abstract; Paragraphs 0050-0053; 0060-0063; Figures 4-8):

- forming (generating, creating, signing, encrypting, etc.) a digital signature of a cast ballot using the private key of a system (server; "The voting tabulator *signs, encrypts and sends the encrypted electronic ballot* to the voting mediator 72 in a message that is encrypted with the voting mediator's public key and signed with the *validator's private key*; Paragraph 0063; Figures 7-8, Element 72);

- associating (storing, linking, relating, etc.) the cast ballot, the voter's digital signature of the ballot with a ballot number (vote serial number, unique number/unique identifier, etc.; validating ballot request; Paragraph 0061; Figures 5-6, Elements 57, 58; validating/authenticating cast ballot; Paragraph 0063; Figure 8, Element 71);

- forming a message (confirmation, string, receipt, acknowledgement, token, etc.) comprising a system's digital signature of the ballot and the ballot number (verification message(s) exchanged between tabulator to mediator; Paragraphs 0061, 0063; Figures 7-8);

- making the message available (verification message exchanged between tabulator to mediator; Paragraphs 0061, 0063; Figures 7-8);

- receiving the message (verification message(s) exchanged between tabulator to mediator; Paragraphs 0061, 0063; Figures 7-8, Elements 72-74);

- extracting (decrypting, stripping, de-signing, deciphering, etc.) the ballot number and the system's digital signature from the message (verification message(s) exchanged between tabulator to mediator; Paragraph 0063; Figures 7-8, Elements 73-75);

- for vote serial number comparing the system's digital signature of the ballot received to the system's digital signature of the ballot (Paragraphs 0061-0063; Figures 7-8); and

- if the comparison shows equivalency (match, consistency, equality, etc.) determining that cast ballot (message, token, etc.) is verified (valid, authentic, genuine, unaltered, secure, etc.; Paragraphs 0061, 0063; Figures 7-8).

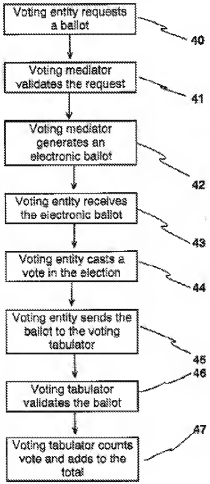
Voting entity requests a ballot
40
Voting mediator validates the request
41
Voting mediator generates an electronic ballot
42
Voting entity receives the electronic ballot
43
Voting entity casts a vote in the election
44
Voting entity sends the ballot to the voting tabulator
45
Voting tabulator validates the ballot
46
Voting tabulator counts vote and adds to the total
47

FIG. 4

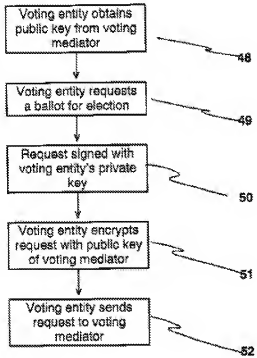
Voting entity obtains public key from voting mediator
48
Voting entity requests a ballot for election
49
Request signed with voting entity's private key
50
Voting entity encrypts request with public key of voting mediator
51
Voting entity sends request to voting mediator
52

FIG. 5

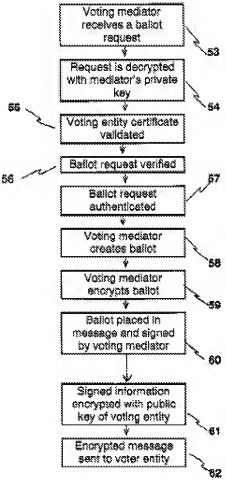
Voting mediator receives a ballot request
53
Request is decrypted with mediator's private key
54
55
Voting entity certificate validated
56
Ballot request verified
57
Ballot request authenticated
Voting mediator creates ballot
58
Voting mediator encrypts ballot
59
Ballot placed in message and signed by voting mediator
60
Signed information encrypted with public key of voting entity
61
Encrypted message sent to voter entity
62

FIG. 6

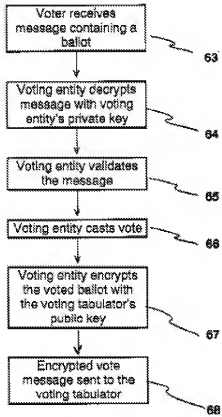
Voter receives message containing a ballot
63
Voting entity decrypts message with voting entity's private key
64
Voting entity validates the message
65
Voting entity casts vote
66
Voting entity encrypts the voted ballot with the voting tabulator's public key
67
Encrypted vote message sent to the voting tabulator
68

FIG. 7

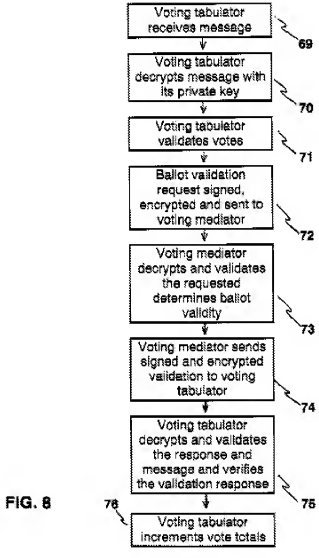

FIG. 8

Regarding Claim 30 Shrader et al. teach a method and system for assisting a user in verifying a ballot recorded in a system wherein the message (confirmation token, received token) further comprises the system's digital signature of the ballot and ballot number (aggregation; Paragraphs 0060-0062; Figure 2, Certificate No.); and wherein the method further comprises the steps of:

- extracting a digital signature of the ballot and ballot number (aggregation) from the message (received token; Paragraphs 0060, 0061, 0063; Figures 6-8); and

- the cast ballot is verified only upon the additional condition that the server's received digital signature of the aggregation is equivalent to the server's digital signature of the aggregation (Paragraphs 0061, 0063; Figures 6-8; Elements 67-75).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 31-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cranor et al., Design and Implementation of a Practical Security-Conscious Electronic Polling System (1996) in view of Shrader et al., U.S. Patent Publication No. 2002/0077887.

Regarding Claim 31 Cranor et al. teach a method and system for assisting a user in verifying (validating, authenticating, certifying, etc.) a cast ballot (vote) recorded (saved, stored, etc.) in a server (system) the method/system comprising (Abstract; Figures 1,3):

- receiving, in a system (server, computer, terminal, device, etc.), at least one set of a cast ballot and a voter's digital signature of the ballot (Paragraph 2, Page 5);

- forming (generating, creating, signing, encrypting, etc.) a digital signature of the ballot using the private key of a system (Paragraph 2, Page 5);

- associating (storing, linking, relating, etc.) the cast ballot, voter's digital signature of the ballot and the voter's identification number (Paragraphs 3-4, Page 7);

- forming a message (confirmation token, string, receipt, acknowledgement, etc.) comprising system's digital signature of the cast ballot, the voter's digital signature of the cast ballot, and the system's digital signature of the aggregation of the cast ballot, the voter's digital signature of the ballot and the system's digital signature of the ballot ("validator", "tallier", "validation certificate", "receipt"; Paragraph 2, Page 5; Last Paragraph, Page 7; Paragraphs 1-4, Page 8; Figure 1);

- making the message (token, string, etc.) available to a user (entity, voter, system, subsystem, third party, etc.; Paragraph 2, Page 5; Last Paragraph, Page 7; Paragraphs 1-4, Page 8; Figure 1);

- receiving the messages (confirmation, token, verification, acknowledgement, etc.; Paragraph 2, Page 5; Last Paragraph, Page 7; Paragraphs 1-4, Page 8; Figure 1);

- extracting (decrypting, stripping, etc.) *at least one of the following* from the message Paragraph 2, Page 5; Last Paragraph, Page 7; Paragraphs 1-4, Page 8; Figure 1):

  - voter's digital signature of the ballot; ***or***

  - system's digital signature of the ballot; ***or***

  - system's digital signature of the voter's digital signature of the ballot, the system's digital signature of the ballot, ballot number (aggregation);

- for extracted ballot number and the corresponding ballot number comparing *at least one of the following* (Paragraph 2, Page 5; Last Paragraph, Page 7; Paragraphs 1-4, Page 8; Figure 1):

- voter's digital signature of the ballot extracted from the message and voter's digital signature of the ballot; ***or***
- system's digital signature of the ballot extracted from the message and system's digital signature of the ballot, ***or***
- system's digital signature of the ballot, digital signature of the voter's digital signature of the ballot, the system's digital signature of the ballot, ballot number (aggregation) extracted from the message and system's digital signature of the ballot, digital signature of the voter's digital signature of the ballot, the system's digital signature of the ballot, ballot number (aggregation); and

- if the comparison shows equivalency (match, consistency, equality, etc.) determining that the cast ballot is verified (valid, authentic, genuine, unaltered, accepted, counted, etc.; Paragraph 2, Page 5; Last Paragraph, Page 7; Paragraphs 1-4, Page 8; Figure 1).

Cranor et al. further teaches individual verifiability (Paragraphs 1-2, Page 12) as well as a unique vote/ballot identifier (receipt number/#; Figure 1, Pages 3-4; Page 8; db index, Paragraph 1, Page 11).

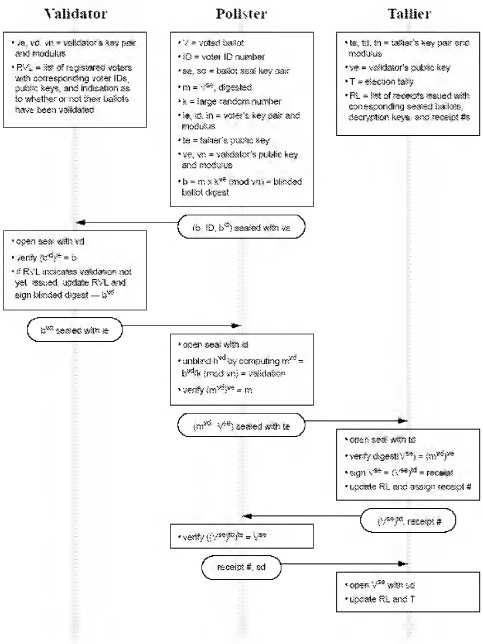

Figure 1: Blind Signature Protocol Overview

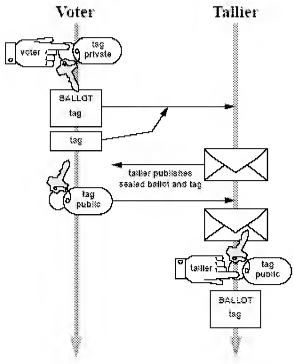

Figure 3: Phase 2 of the Two Agency Protocol

Cranor et al. teaches a system and method for voting securely over a network comprising *associating at least two unique identifiers with ballots cast by voters* wherein the unique identifiers (vote serial numbers) are generated and associated with the cast ballot only *after* the voters casts their ballot containing their choices (receipt number: Paragraphs 3-4, Page 8; Figure 1; index number for uniquely identifying, accessing and storing cast ballots in a database, Paragraph 4, Page 8)

Our tallier computes a 16-byte digest of *each encrypted ballot received* and uses it *to index the encrypted ballots and receipts*. A hash table could be added for greater efficiency in *looking up encrypted ballots*. This modification is probably necessary to accommodate large-scale elections. (emphasis added, Paragraph 4, Page 8)

While the use of unique identifiers for (paper and/or electronic) ballots is a common practice Cranor et al. does not expressly teach that the cast ballot contains a vote serial number as claimed.

Shrader et al. teach that ballots comprise a vote serial number (unique ballot ID, certificate no.) in an analogous art of secure electronic voting/balloting over a network for the purposes of ensuring voters only cast their ballot once (Paragraph 0061; Figures 2, 5-6, Elements 57, 58; validating/authenticating cast ballot; Paragraph 0063; Figure 8, Element 71).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for verifying a cast ballot recorded on a system (server) as taught by Cranor et al. would have benefited from including in the ballot a unique ballot identifier (vote serial number) in view of the teachings of Shrader et al.; the resultant system/method providing an additional mechanism for ensuring that valid voters only vote once (Shrader et al.: Paragraph 0063).

Regarding Claim 32 Cranor et al. teach a method and system for verifying a cast ballot recorded in a system further comprising if the comparison shows equivalence between the system's digital signature of the ballot, digital signature of the voter's digital signature of the ballot, the system's digital signature of the ballot, extracted from the

message and system's digital signature of the ballot, digital signature of the voter's digital signature of the ballot and the system's digital signature of the ballot (aggregation) determining that the message (token) has not been modified (altered, disturbed, edited, etc.) since its formation (Paragraph 2, Page 5; Last Paragraph, Page 7; Paragraphs 1-4, Page 8).

Cranor et al. does not expressly teach that ballots further comprise vote serial numbers as claimed.

Shrader et al. teach that ballots comprise a vote serial number (unique ballot ID) in an analogous art of secure electronic voting/balloting for the purposes of ensuring voters only cast their ballot once (Paragraph 0061; Figures 5-6, Elements 57, 58; validating/authenticating cast ballot; Paragraph 0063; Figure 8, Element 71).

It would have been obvious to one skilled in the art at the time of the invention that the system and method for verifying a cast ballot recorded on a system (server) as taught by Cranor et al. would have benefited from including in the ballot a unique ballot identifier (vote serial number) in view of the teachings of Shrader et al.; the resultant system/method providing an additional mechanism for ensuring that valid voters only cast their ballot once (Shrader et al.: Paragraph 0063).

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Balolia, U.S. Patent Publication No. 2002/0066780, teach a system and method for secure voting wherein cast ballots are assigned a vote serial number (see at least claim 7).

- Biddulph, U.S. Patent Publication No. 2002/1069756, teach a system and method for secure voting comprising a unique identifier to cast ballots stored in a database (see at least Paragraph 0036).

- Neff, U.S. Patent Publication No. 2003/0028423, teach a system and method for assisting users in verifying votes using well known cryptographic techniques/methods.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SCOTT L. JARRETT whose telephone number is (571)272-7033. The examiner can normally be reached on Monday-Friday, 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Van Doren Beth can be reached on (571) 272-6737. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Scott L Jarrett/
Primary Examiner, Art Unit 3623